

Lesson 3

Wind Energy Answer Sheet

True or False? The Wind Energy Edition

Put a tick in the box to indicate whether the following statements are True or False.

Statement	True	False	Explanation
Wind turbines take more energy to build than they generate over their lifetime			A wind turbine can pay back the energy used in manufacturing within three to five months of operation
Wind turbines produce clean electricity			Wind energy has the lowest greenhouse gas emissions per kilowatt-hour over its lifetime combined to most other energy sources
Wind farms require a lot of land to operate as wind turbines take up a lot of space			Wind turbines are very land efficient and take up only a small footprint. The land underneath can also be used for other uses such as farming. In addition to this, wind farms can be decommissioned, and the land can return to its original state unlike other energy sources
Wind turbines are expensive to set up and run			With the rise in wind energy production, innovation is increasing and cost is reducing because of competition
The amount of carbon dioxide generated in the construction of wind turbines ruins the positive impact they have			Over the lifetime of the turbine, emissions are caused by its construction, transport, installation and decommissioning. The amount of CO ₂ a turbine generates over its lifetime is less than the CO ₂ emissions it displaces from the electricity system. The length of time for it to achieve this is known as the 'carbon payback period'. The carbon payback period is generally between 5 and 12 months depending on the location of the turbine
Ireland is an excellent country for wind energy production as our wind speeds are generally higher than mainland Europe			This statement is true. Wind speeds are higher than mainland Europe and wind speeds increase the more north we go on the island of Ireland

Think of reasons to justify each answer.
Compare and discuss answers with another student.

The Climate Connection – Match the causes with the effects

Read each of the causes and match them with an effect. Write the number for each effect under the corresponding letter for each cause in the table below.

Causes		Effects	
A	Burning coal and gas to generate energy	1	Less CO2 absorbed by trees
B	Deforestation	2	More extreme weather such as hurricanes
C	Producing lots of waste	3	More extreme weather events
D	Rising temperatures	4	More pressure on the power grid
E	More windfarms	5	Increased greenhouse gas emissions
F	Melting glaciers and ice sheets	6	More methane produced from landfill
G	Leaving lights on unnecessarily	7	Less reliance on fossil fuels
H	Rising sea temperatures	8	Rising sea levels

Causes	A	B	C	D	E	F	G	H
Effects	5	1	6	3	7	8	4	2

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Extension Activities

Activity One: Linked to your energy usage

Create a poster aimed at students about how they can reduce their impact on energy use. Give some tips on how they can use energy more sustainably.

Activity Two: Linked to the impact of using renewable energy

Write a letter to the principal of your school outlining why you think the school should consider installing solar panels. In the letter, outline the benefits that renewable energies can have for the school, the local community and Ireland.